CONTENTS

Number 1

J. A. Currie. Gas diffusion through soil crumbs: the effects of compaction and wetting 1

P. Colbourn, M. M. Iqbal & I. W. Harper. Estimation of the total gaseous nitrogen losses from clay soils under laboratory and field conditions 11

R. B. Smith & D. N. Pratt. The variability in soil particle size test results by various sub-sampling techniques 23

D. Hill. Diffusion coefficients of nitrate, chloride, sulphate and water in cracked and uncracked Chalk 27

G. E. Hawkes, D. S. Powlson, E. W. Randall & K. R. Tate. A ^{31}P nuclear magnetic resonance study of the phosphorus species in alkali extracts of soils from long-term field experiments 35

R. H. Newman & K. R. Tate. Use of alkaline soil extracts for ^{13}C n.m.r. characterization of humic substances 47

Susan K. Gregson & B. J. Alloway. Gel permeation chromatography studies on the speciation of lead in solutions of heavily polluted soils 55

M. Nanzyo. Diffuse reflectance infrared spectra of phosphate sorbed on alumina gel 63

O. K. Borggaard. Influence of iron oxides on the non-specific anion (chloride) adsorption by soil 71

P. J. Isaacson & M. H. B. Hayes. The interaction of hydrazine hydrate with humic acid preparations at pH 4 79

N. D. Misopolinos & J. M. Kalovoulos. Determination of CEC and exchangeable Ca and Mg in non-saline calcareous soils 93

V. C. Farmer, G. Mew, B. Clayden & R. Lee. Hypothesis on the pedogenesis of the 'gley podzols' of the west coast of South Island, New Zealand 99

C. N. MacVicar, R. W. Fitzpatrick & M. E. Sobczyk. Highly weathered soils in the east coast hinterland of Southern Africa with thick, humus-rich A1 horizons 103

W. A. Adams & J. K. Kassim. Iron oxyhydroxides in soils developed from Lower Palaeozoic sedimentary rocks in mid-Wales and implications for some pedogenetic processes 117

R. Webster & T. M. Burgess. Sampling and bulking strategies for estimating soil properties in small regions 127

B. R. Sharma & T. N. Chaudhary. Nitrogen uptake by wheat in relation to water regime and depth of N placement in a loamy sand soil: measurement and model simulation 141

D. Vaughan, R. E. Wheatley & B. G. Ord. Removal of ferrous iron from field drainage waters by conifer bark 149

Books on Soil Science recently received 155

Number 2

R. E. White, G. W. Thomas & M. S. Smith. Modelling water flow through undisturbed soil cores using a transfer function model derived from ^{3}HOH and Cl transport 159

R. J. Dowdell, C. P. Webster, D. Hill & E. R. Mercer. A lysimeter study of the fate of fertilizer nitrogen in spring barley crops grown on shallow soil overlying Chalk: crop uptake and leaching losses 169

R. J. Dowdell & C. P. Webster. A lysimeter study of the fate of fertilizer nitrogen in spring barley crops grown on a shallow soil overlying Chalk: denitrification losses and the nitrogen balance 183

D. Barraclough, E. L. Geens & J. M. Maggs. Fate of fertilizer nitrogen applied to grassland. II. Nitrogen-15 leaching results 191

M. A. Wilson, P. F. Barron & A. S. Campbell. Detection of aluminium coordination in soils and clay fractions using ^{27}Al magic angle spinning n.m.r. 201

M. A. Wilson. Soil organic matter maps by nuclear magnetic resonance 209

K. Murray & P. W. Linder. Fulvic acids: structure and metal binding. II. Predominant metal binding sites 217

R. Chaney & R. S. Swift. The influence of organic matter on aggregate stability in some British soils 223

S. Murayama. Decomposition kinetics of straw saccharides and synthesis of microbial saccharides under field conditions 231

P. J. Loveland & P. Digby. The extraction of Fe and Al by 0.1 M pyrophosphate solutions: a comparison of some techniques 243

C. P. Murphy. The morphology and genesis of eight surface-water gley soils developed in till in England and Wales 251

N. S. Bolan & N. J. Barrow. Modelling the effect of adsorption of phosphate and other anions on the surface charge of variable charge oxides 273

N. J. Barrow. Modelling the effects of pH on phosphate sorption by soils 283

H. R. B. Hack. Calculation of the field volumetric water content of cracking clay soils from measurements of gravimetric water content and bulk density 299

M. McGowan. Soil water regimes of soils developed on Keuper Marl 317

A. C. Imeson & M. Vis. Seasonal variations in soil erodibility under different land-use types in Luxembourg 323

V. C. Farmer, A. R. Fraser, L. Robertson & J. R. Sleeman. Proto-imogolite allophane in podzol concretions in Australia: possible relationship to aluminous ferrallitic (lateritic) cementation 333

P. C. Brookes & S. P. McGrath. Effects of metal toxicity on the size of the soil microbial biomass 341

H. R. Rowse & D. Goodman. Drilling vegetables into autumn-cultivated soil with a low ground pressure vehicle: effects of timeliness and soil compaction 347

Books on Soil Science recently received 357

Number 3

G. D. Towner. An assessment of an approximate analytic method for predicting breakthrough curves for steady state longitudinal dispersion of solute in soil with non-uniform water distribution 359

H. Frenkel & N. Alperovitch. The effect of mineral weathering and soil solution concentration on ESR–SAR relationships of arid and semi-arid zone soils from Israel 367

L. Madrid, E. Díaz & F. Cabrera. Charge properties of mixtures of minerals with variable and constant surface charge 373

D. G. Lumsdon, A. R. Fraser, J. D. Russell & N. T. Livesey. New infrared band assignments for the arsenate ion absorbed on synthetic goethite (α-FeOOH) 381

Y. Okamura & K. Wada. Ammonium–calcium exchange equilibria in soils and weathered pumices that differ in cation-exchange materials 387

K. W. T. Goulding & O. Talibudeen. Thermodynamics of K–Ca exchange in soils. I. Effects of potassium and organic matter residues in soils from the Broadbalk and Saxmundham Rotation I Experiments 397

K. W. T. Goulding & O. Talibudeen. Thermodynamics of K–Ca exchange in soils. II. Effects of mineralogy, residual K and pH in soils from long-term ADAS experiments 409

S. C. Jarvis. The forms of occurrence of manganese in some acidic soils 421

S. C. Jarvis. The association of cobalt with easily reducible manganese in some acidic permanent grassland soils 431

P. H. Nye. On estimating the uptake of nutrients solubilized near roots or other surfaces 439

P. Buurman & L. P. Van Reeuwijk. Proto-imogolite and the process of podzol formation: a critical note 447

V. C. Farmer. Distribution of allophane and organic matter in podzol B horizons: reply to Buurman & Van Reeuwijk 453

C. E. Mullins & K. P. Panayiotopoulos. The strength of unsaturated mixtures of sand and kaolin and the concept of effective stress 459

Liu Zhi-Guang & Yu Tian-Ren. Depolarization of a platinum electrode in soils and its utilization for the measurement of redox potential 469

C. P. Murphy & R. A. Kemp. The over-estimation of clay and the under-estimation of pores in soil thin sections 481

D. Goodman & H. R. Rowse. A combined penetrometer and surface relief meter for studying drill coulter performance 497

P. H. Walker, G. G. Beckmann & R. Brewer. Definition and use of the term 'pedoderm' 505

Number 4

Y. M. KHANIF, O. VAN CLEEMPUT & L. BAERT. Evaluation of the Burns model for nitrate movement in wet sandy soils 511

RACHHPAL-SINGH & P. H. NYE. The effect of soil pH and high urea concentrations on urease activity in soil 519

RACHHPAL-SINGH & P. H. NYE. Diffusion of urea, ammonium and soil alkalinity from surface applied urea 529

P. COLBOURN, I. W. HARPER & M. M. IQBAL. Denitrification losses from ^{15}N-labelled calcium nitrate fertilizer in a clay soil in the field 539

J. M. BRACEWELL & G. W. ROBERTSON. Characteristics of soil organic matter in temperate soils by Curie point pyrolysis–mass spectrometry. I. Organic matter variations with drainage and mull humification in A horizons 549

R. R. ANAND & R. J. GILKES. Mineralogical and chemical properties of weathered magnetite grains from lateritic saprolite 559

A. S. CAMPBELL & U. SCHWERTMANN. Iron oxide mineralogy of placic horizons 569

G. A. REAVES & M. L. BERROW. Total copper contents of Scottish soils 583

K. EGASHIRA & T. WATANUKI. Soil properties relating to the sediment volume of Ando soils 593

P. GRAINGER. The influence of clay mineralogy and diagenesis of Upper Carboniferous shales on soil formation in parts of Devon 599

I. REED & R. J. PARKINSON. The wetting and drying of a grazed and ungrazed clay soil 607

E. TESSENS. Clay migration in upland soils of Malaysia 615

R. L. PARFITT, M. SAIGUSA & D. N. EDEN. Soil development processes in an Aqualf-Ochrept sequence from loess with admixtures of tephra, New Zealand 625

T. M. BURGESS & R. WEBSTER. Optimal sampling strategies for mapping soil types. I. Distribution of boundary spacings 641

T. M. BURGESS & R. WEBSTER. Optimal sampling strategies for mapping soil types. II. Risk functions and sampling intervals 655

R. WEBSTER & S. NORTCLIFF. Improved estimation of micro nutrients in hectare plots of the Sonning Series 667

A. J. RINGROSE-VOASE & P. BULLOCK. The automatic recognition and measurement of soil pore types by image analysis and computer programs 673

M. ULAS & M. SAYIN. Quantitative determination of calcite and dolomite in soils by X-ray diffraction 685

Books on Soil Science recently received 693